

509,099

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 October 2003 (09.10.2003)

PCT

(10) International Publication Number
WO 03/083988 A2

(51) International Patent Classification⁷: **H01Q**

(21) International Application Number: **PCT/CA03/00446**

(22) International Filing Date: 28 March 2003 (28.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/CA 02/00423 28 March 2002 (28.03.2002) CA
60/367,748 28 March 2002 (28.03.2002) US

(71) Applicant (for all designated States except US): **UNIVERSITY OF MANITOBA [CA/CA]**; 204 Administration Building, Winnipeg, Manitoba R3V 5V4 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SHAFAI, Lotfollah** [CA/CA]; 730 Cloutier Drive, Winnipeg, Manitoba R3V 1A8 (CA). **SHAFAI, Cyrus** [CA/CA]; 102 BriarCliff Bay, Winnipeg, Manitoba R3T 3H7 (CA).

(74) Agent: **ADAMS, Thomas**; Adams Patent & Trademark Agency, P.O. Box 11100, Station H, Ottawa, Ontario K2H 7T8 (CA).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

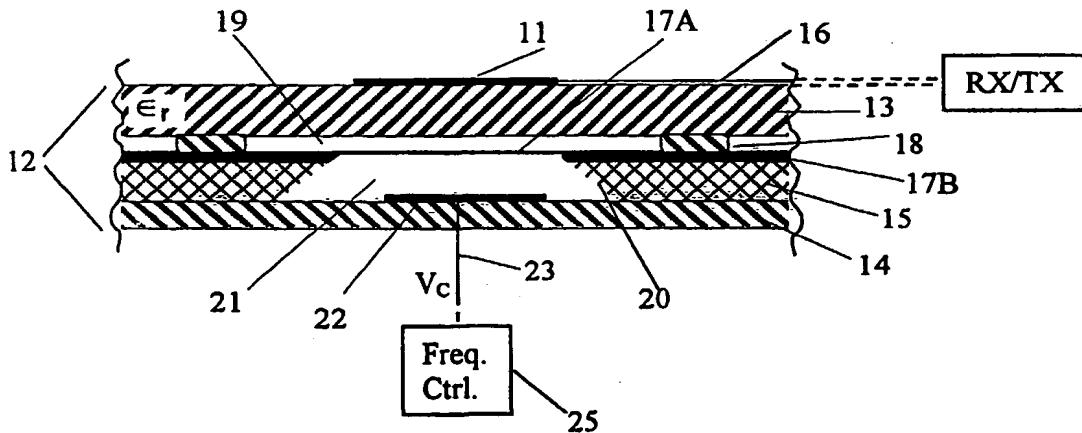
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTIPLE FREQUENCY ANTENNA



WO 03/083988 A2

(57) Abstract: An antenna having a resonant structure, comprises an antenna element (11) and an adjacent electrode (17A) and control means (22,25) for changing a resonance frequency of the antenna element. The control means may comprise a conductive membrane (17B) spaced from the antenna element. The resonance frequency then is changed by flexing the membrane, conveniently by applying a potential difference between the membrane and an adjacent control electrode.

DT10 Rec'd PCW 10 27 SEP 2004

10/509099

The PTO did not receive the following
listed item(s) No Post card

BEST AVAILABLE COPY